

# RJS

a Subsidiary of Printronix, Inc.



## RJS SV SERIES of SCANNER/VERIFIERS

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### RJS SV SERIES of SCANNER/VERIFIERS



The SV Series of scanner/verifiers by RJS provides both fixed position scanning and high-speed on-line ANSI method verification of linear bar codes. This unique instrument can be used for many types of bar code scanning and/or verifying applications.

The SV Series assures that bar code print quality is at an acceptable level. It checks to make sure the print mechanism has not failed or gone out of adjustment during operation. It even makes sure that the correct data is encoded and that the encoded data is in the proper format.

### The SV SERIES of SCANNER/VERIFIERS are ON-LINE VERIFIERS

The SV Series analyzes and reports virtually every verification parameter known. ANSI and Traditional print quality parameters are transmitted along with decoded data. The reported symbol quality parameters ensure the print method or complete bar code process is optimized. This is important for ISO corrective action procedures, label manufacturing and printing, tracking systems, ink jet applications and more.

### The SV SERIES of SCANNER/VERIFIERS are FIXED POSITION SCANNERS

The SV Series can operate as a fixed position scanner. But, since it also provides diagnostic bar code quality information, it can reduce system downtime and save material costs. It does this by isolating the source of the problem. Once the source of the problem is found, it can be corrected before non-readable bar codes are printed and material is wasted.

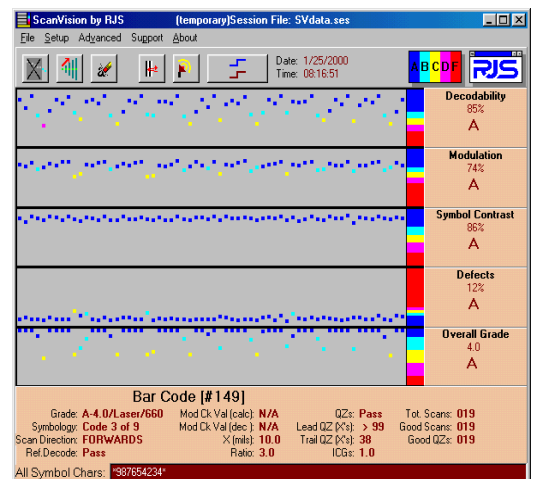
The diagnostic capability is also useful when installing the scanner or after a conveyor or printer maintenance cycle. The available print quality information gives an indication of first time read rates, optimal scanner alignment, optimal conveyor speed and optimal printer settings and adjustments. In short, everything that is needed to ensure proper set-up of a system.

### EASY SETUP / FLEXIBLE INTERFACE

The SV Series uses a serial port to interface with RJS ScanVision, a PC based software package used for set-up and monitoring. Use ScanVision for SV setup while the scanner/verifier is off line and/or use it for real-time bar code quality analysis while the scanner/verifier is operating. The unit also incorporates Model SV download language for setup without RJS ScanVision.

Five hardware outputs are available via an I/O-Power port for logic operation such as No Read, Poor Quality, Good Quality or Good Read status. Two synchronization inputs are also available for robust No Read evaluations. Two LED's are available for status indications.

The serial port can also be used without ScanVision to provide decoded data and/or bar code analysis information to a host system.



**For further details please contact Newbury Data on 01606 593424**

## RJS MODEL SV SERIES SYSTEM DESCRIPTION and TECHNICAL DATA

### SV Series Model Specifications\*

	SV100	SV100HD	SV100C	SV200-1	SV200-2
Analyses/sec	100	100	100	200	200
Beam Width	6" (152mm)	4.5" (114mm)	10.5" (267mm)	2.5" (63.5mm)	1.75" (44mm)
Focus Distance	8" (203 mm)	6" (152mm)	15" (381mm)	8" (203mm)	6" (152mm)
X dim (min)	.0067" (.17mm)	.005" (.127mm)	.013" (.33mm)	.0067" (.17mm)	.005" (.127mm)

\* Contact RJS Technical Support for information on custom and other models

### Accessories and Options

Universal Power Supply Unit, RJS ScanVision Software, Female DB-9 to Female DB-9 Communication Cable (6 ft. (1.8 M) length), Calibration Symbol, Mounting Stand, Rastering Scan Line, Interface Kits for Zebra and Sato Printers (contact RJS for additional printer types), Power Supply/Sensor/Output Cable.

### Data and Quality Parameters Available\*\*

Decoded Data, All Symbol Characters, Modulo Check Digit Analysis, Symbology Type, ANSI Method Overall Symbol Grade, ANSI Method Parameter Grades, (Reference Decode, Decodability, Modulation, Symbol Contrast, Rmin/Rmax, Defects, Min. Edge Contrast and Global Threshold), Average Bar Deviation, Ratio (if applicable), PCS, Element Reflectance (min. and max.), Quiet Zone Analysis, X Dimension, Inter-Character Gap (if applicable), No Read Flag, % decode, Partial Read Analysis, Pass/Fail Flag, Data Match (up to ten (10) fields), Increment/Decrement (base 10 and base 36).

\*\* Note: 1. All reflectance parameters require calibration, fixed scanning distance and fixed angle of scan  
2. X dimension requires fixed scanning distance

### Symbologies

USS Code 39, USS Code 128, USS Code 93, USS Codabar,  
USS Interleaved 2 of 5, UPC / EAN including 2 and 5 digit supplemental codes  
(Contact RJS for special symbology applications.)

### Scanning Performance

Depth of Field – Mount at specified focus distance for most accurate verification operation.  
Ladder or Picket Fence Bar Codes  
Up to four (4) bar codes across

### Operation Modes

Sync (edge and envelope), Freescan and ScanVision off line modes can be enabled

### Physical

Package: 4.4" (112 mm) x 2.4" (61 mm) x 5.2" (132 mm)  
Indications: Five (5) LED's – Power/Sync, Calibration, Read, two (2) programmable LED's  
Comm Port: DB-9 male, RS 232C, programmable baud rate up to 115200 baud  
I/O-Power: DB-15 male, five (5) programmable outputs, two (2) sync inputs  
+5VDC @ 1 amp required  
Mounting: Two (2) sets of mounting holes on two (2) different surfaces or a clamp for tightening to a 3/8" (9.5 mm) rod.



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## **RJS SV Series Setup Hints – Scanning Distance and Angle**

### **Introduction**

The RJS SV Series of Scanner/Verifiers requires a fixed scanning distance and angle for maximum verification analysis accuracy. This is similar to the requirement of a wand “guide” on a portable bar code verifier to ensure the optics is placed at a consistent angle. If the “guide” is not placed properly, analysis results will become inaccurate, although the bar code will still be decoded.

This document is intended to provide some hints to help make the basic scanning setup as easy and quick as possible in order to allow more time to concentrate on the application portion of the installation.

This document is written with the assumption that RJS ScanVision software is being used as the setup tool. ScanVision is available for download from the RJS web site at [www.rjs1.com](http://www.rjs1.com). A null modem serial communication cable is required to interface the PC to an SV unit during the setup process. An appropriate power / interface cable must also be connected in order to operate the SV unit.

It is highly recommended to have a SV Series Operator’s Guide for reference while reading this document.

### **Setting the proper scan distance**

A proper and fixed scan distance is required to make sure the laser beam is in focus, therefore providing the correct optical resolution for the particular SV model. The specified scan distance is indicated on a label on the side of each unit.

The SV Series’ feature of being able to measure a bar code’s X dimension makes it convenient for setting up scan distance. In the manufacturing process each SV unit is programmed to accurately measure the X dimension when scanning at the optimum distance. Therefore, if the analysis of a bar code with a known X dimension indicates an accurate result, the scanner is set to the proper scan distance. Below are some basic steps to set the proper scan distance using the X dimension as the adjustment factor:

1. Place the SV Calibration symbol (supplied with each SV unit) in the laser beam.
2. Roughly adjust the scan distance so the READ led is on.
3. Press the SPACE bar in ScanVision to get an analysis of the code.
4. Adjust scan distance until the X dimension matches the cal symbol’s X dimension within +/- .1 mil. All RJS calibration symbols have a 10 mil X dimension unless otherwise specified on the symbol. Note: a scan distance too close will read a larger than the known X dimension. Too far will read smaller than the known dimension. The X dimension is titled “X (mils)” in the ScanVision Session Mode display as shown in Figure 1.

Once the Scan distance (and angle – see setting proper angle) is set, the SV unit does not have to be moved again.



9. If the bottom of the signal is not flat, change the scan angle and repeat steps 3 – 7. If the code's signal amplitude is not within the yellow lines, follow the Setup procedure in the SV Series Operator's Guide by using the ~Hd commands. (See Figure 3)
10. At this point, the scanner gain and offset are compatible with the Calibration symbol's contrast. Place an actual symbol being used in the application in the beam at the proper distance and angle.
11. Press the "New Profile" in the Reflectance Profile screen button to get a Reflectance Profile
12. Confirm the signal levels are between the yellow lines, amplitude is 5 lines high minimum and flat on the bottom as shown in Figure 2. If correct, the scanner is set up for the material in the application. Go to Step 13.
13. If the bottom of the signal is not flat, or the signal level is not within the yellow lines (see Figure 3), or at least 5 lines in amplitude, the material used in the application is not adaptable to scanner settings compatible with the calibration symbol. Use steps 3-8 to adjust the scanner gain and offset for this material and do not use any parameters that involve reflectance measurements for failure detection for this application. See the Calibration Hints section.
14. IMPORTANT!! At this point the scanner is set up for the material in the application and the ~Sc command has been used at least once to change the scanner's setting from the initial state. To finalize the settings, transmit the SV command ~Hx (lower case x). This will save the new settings to non-volatile memory for permanent operation.
15. The SV unit is now ready to be programmed for any application specific requirements using output interface modes, or other modes of scanning operation such as ladder orientation, static codes mode, etc.

Figure 2 – Example of “Good” Scan Profile

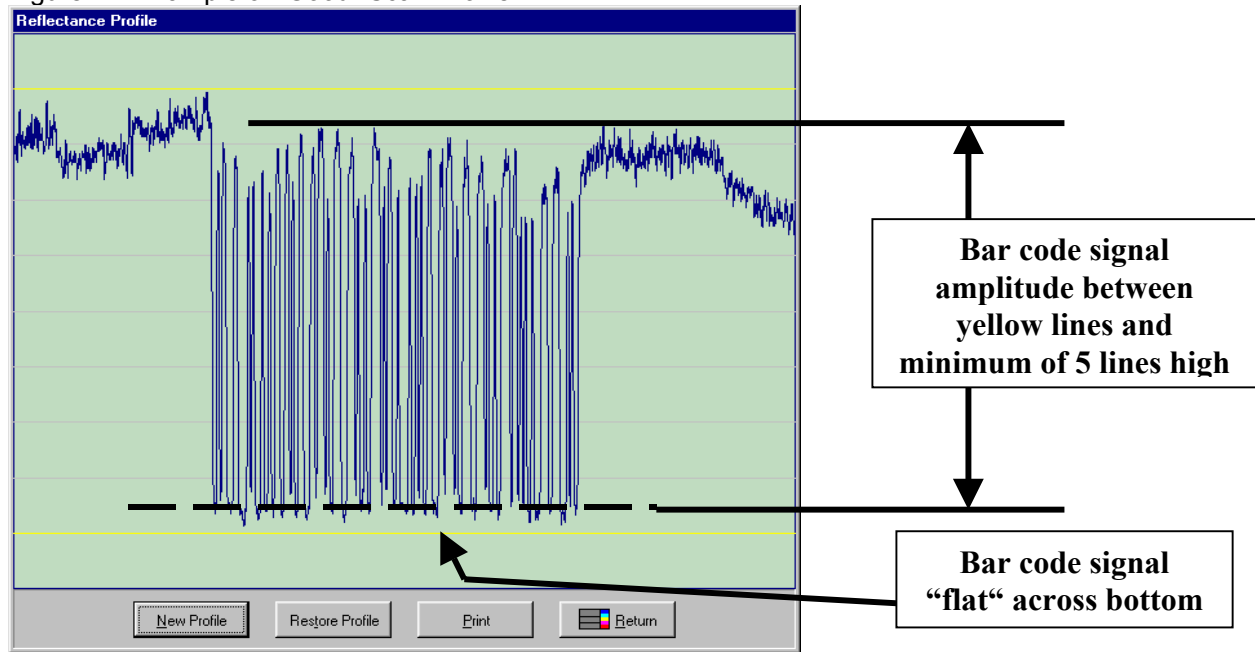
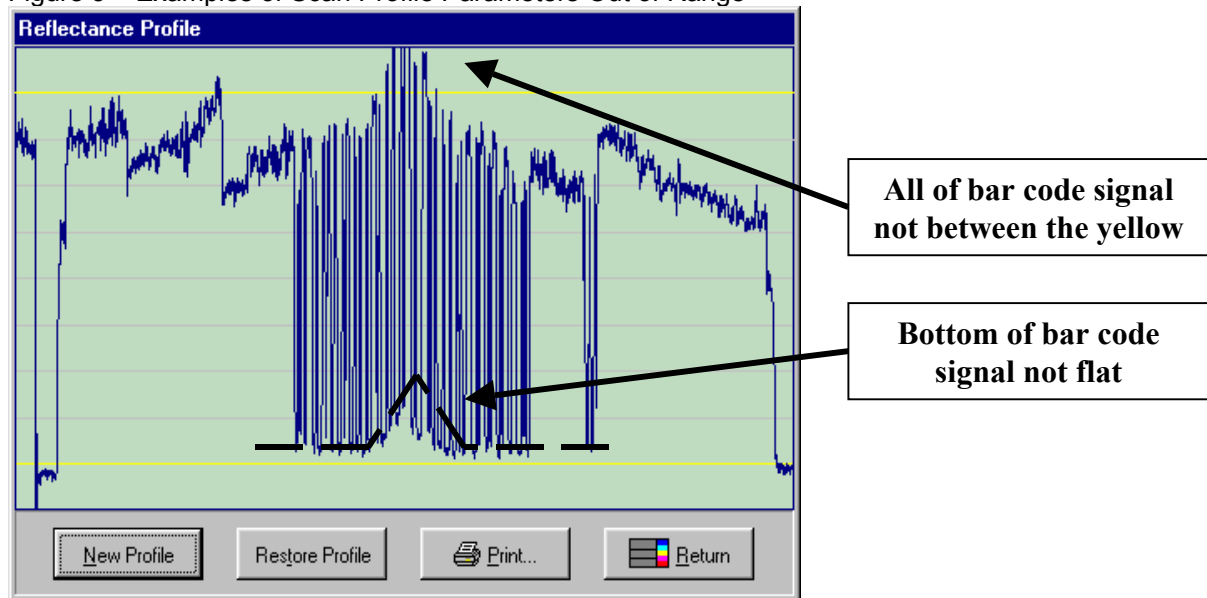


Figure 3 – Examples of Scan Profile Parameters Out of Range



## **Calibration Hints**

Calibration is used to normalize reflectance calculations to known (and/or traceable) values in absolute units of % reflectance. Calibration affects reflectance calculations only. Calibration does not affect any other calculations or ability to decode a symbol, etc. The scanner gain and offset settings have the major effect on scanning performance. Keeping the scanner signal linear (between the yellow lines as described in the distance and angle setup sections above) is very helpful for good decoding, but is CRUCIAL for reflectance measurements. The calibration procedure will not be successful unless the bar code signal is proper.

There may be cases in applications where the material being analyzed requires a scanner gain and offset setting that will not allow calibration with the standard SV calibration symbol. In most cases this is due to a low contrast material (such as brown corrugated) that will make the signal level on the calibration symbol go past the yellow lines. In cases like this there are two basic choices to make:

1. Do not use parameters that involve absolute units of reflectance as failure criteria. These parameters include Symbol Contrast, Overall ANSI Grade, PCS, Rmax, and Rmin.
2. If reflectance parameters are required to be analyzed in the application, a calibration symbol can be created from the material being analyzed. Contact RJS Technical Support for details.



## **Procedures for Using .stp and .cfg Files to Program RJS SV Series Units**

### **.stp File Overview**

These files make it convenient to program all of the failure parameters set by the ~PB8 commands when an output interface mode is enabled. See figure 1 – Port Configuration Screen. All items marked 2 through 26 correspond to the ID indicator in the ~PB8 command structure. See the Output Port Setup Commands section of the SV Series Operator's Guide for command details.

An exception is for parameter marked 1 – Overall grade. This corresponds to the ~LA command for Overall Symbol grade threshold. See the Label Setup Commands section of the SV Series Operator's Guide for command details.

### **.cfg File Overview**

These files make it convenient to program the major scanner setup parameters plus output modes and sync modes. See Figure 3 – Verifier Configuration Setup Screen. All the commands available are shown. See the SV Command Language section of the SV Series Operator's Guide for command details.

### **.cfg File Notes:**

1. *There are additional SV Series commands not supported by .cfg files such as data matching types ~BC and ~Br. Check all settings to make sure the unit is completely programmed for the application.*
2. *When sending a new .cfg file that changes the laser beam width, the beam will need to be adjusted so it is centered to the scanner. Use the ~HS### command to center the beam. After the beam is centered, memorize the setting using the ~Hx command.*

### **File Storage**

#### **Store .cfg and .stp files in the PC running ScanVision or on a Floppy disc.**

Program SV Port Configuration Using an Existing .stp File

1. Use ScanVision 2.09 or higher to communicate with the SV unit
2. From the Advanced menu, click on Port Configuration to get a Port Configuration Setup Screen like Figure 1.
3. Click on File to open the appropriate .stp file.
4. Click on Send ALL
5. Click on Permanent
6. Click on Return
7. The Port Configuration is now set permanently per the .stp file parameters

Program SV Setup Configuration Using an Existing .cfg File

1. Use ScanVision 2.09 or higher to communicate with the SV unit
2. Simultaneously press CNTL SHFT F5
3. If a password is requested (depending on the version of ScanVision), the password is doorknock (lower case letters). See Figure 2 – Password Screen
4. If required, type doorknock then click on Close to get a Verifier Configuration Setup Screen like Figure 3.
5. Click on File to open the appropriate .cfg file
6. Ensure that command transmissions choice for unit dependent parameters is disabled.
7. Click on Send ALL
8. Click on Permanent
9. Click on Return
10. The Verifier Configuration is now set permanently per the .cfg file parameters

**For further details please contact Newbury Data on 01606 593424**

## Procedures for Creating .stp and .cfg Files

### Create or Edit a .stp File

1. Use ScanVision version 2.09 or higher communicating with a working SV unit <sup>See Note 1</sup>
2. From the Advanced menu, click on Port Configuration to get a default Port Configuration Setup Screen like Figure 1.
3. Begin with the default values in Port Configuration Setup Screen, or click on File to retrieve an existing file to edit, or click on the Query button to retrieve the SV unit's port configuration settings. (Note: If using Query, any values differing between the file on the screen and the verifier settings will be marked with a red X <sup>See Note 2</sup> as shown in Figure 4.)
4. Type new values directly in the appropriate scratch pad boxes to make a new file configuration.
5. Click on Send ALL
6. Click on Query and make sure no red X marks are displayed
7. Ensure the SV unit operates as intended with this file
8. Save the .stp file under the name and at the location desired.

### Create or Edit a .cfg File

1. Use ScanVision version 2.09 or higher communicating with a working SV unit <sup>See Note 1</sup>
2. Simultaneously press CNTL SHFT F5
3. If a password is requested (depending on the version of ScanVision), the password is doorknock (lower case letters). See Figure 2 – Password Screen
4. If required, type doorknock then click on Close to get a Verifier Configuration Setup Screen like Figure 3.
5. Begin with the default values in the Verifier Configuration Setup Screen, or click on File to retrieve an existing file to edit, or click on the Query button to retrieve the SV unit's configuration settings. (Note: If using Query, any values differing between the file on the screen and the verifier settings will be marked with a red X <sup>See Notes 2, 3</sup> as shown in Figure 5.)
6. Type new values directly in the appropriate scratch pad boxes to make a new file configuration.
7. Click on Send ALL
9. Click on Query and make sure no red X marks are displayed
10. Ensure the SV unit operates as intended with this file
11. Save the .cfg file under the name and at the location desired.

#### *Notes:*

1. *The system requires a file be sent to, and then validated by an SV unit before it can be properly stored. This will most probably alter the SV settings, but since the ~Hx command is not sent, the SV can be returned to its normal settings by cycling power off then on.*
2. *The values of the internal settings values read back are also displayed to the right of the entered values in the scratchpads*
3. *The Scanner dependent parameters shown in light green fields will probably have red X marks. This is acceptable when the DISABLED choice is set for unit dependent parameters. Some versions of ScanVision will show red X marks for ~Sl and ~Sh. This is acceptable. If values in the scratchpads for these two commands are not zero and red X is displayed, contact RJS technical support to ensure there is no problem due to the version of ScanVision.*

Figure 1 – Port Configuration Setup Screen

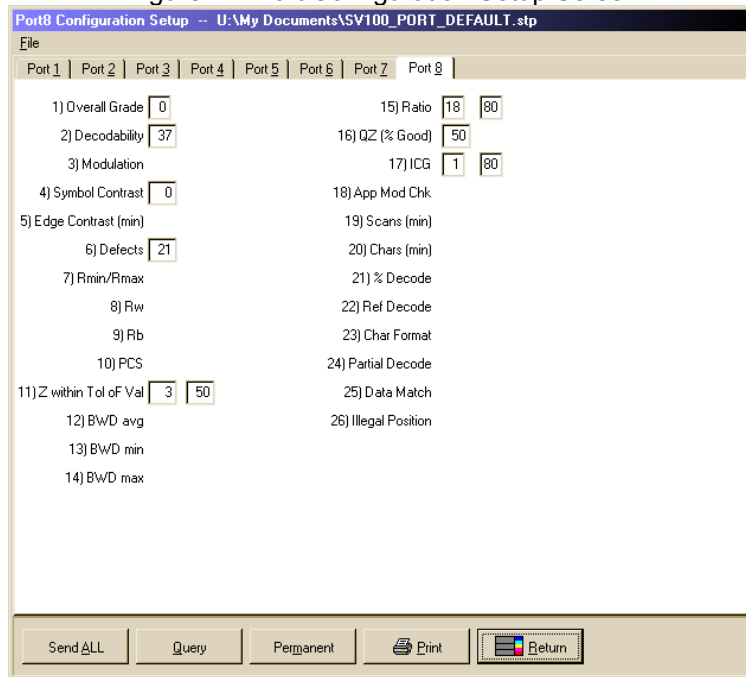


Figure 2 – Password Screen

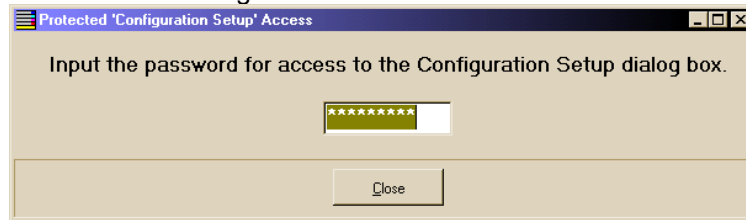


Figure 3 – Verifier Configuration Setup Screen

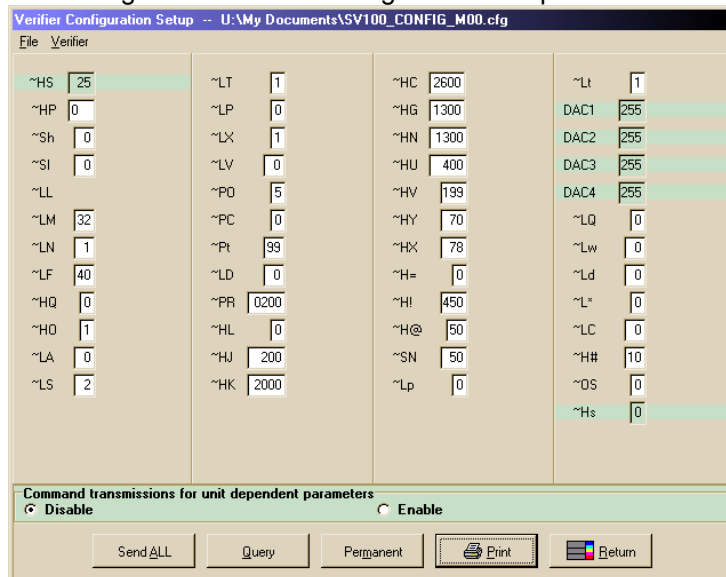


Figure 4- Port Configuration Setup Screen – showing red X for non-match Query

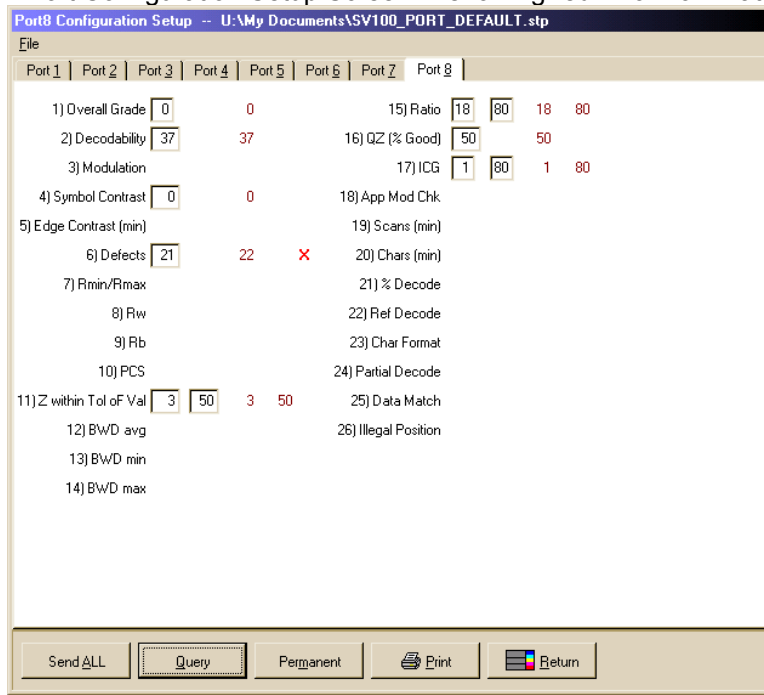


Figure 5 – Verifier Configuration Screen show -- showing red X for non-match Query



**SV SERIES VERIFICATION PRODUCTS PRICE LIST**

<b>PRODUCT DESCRIPTION</b>	<b>PART NO.</b>	<b>SRP</b>
<b><u>SV SERIES VERIFICATION PRODUCTS</u></b>		
SV100 SCANNER/VERIFIER (medium density codes (6.6 – 40 mil X)	002-7973	£1,986.97
SV100HD SCANNER/VERIFIER (for high density symbols (5 - 20 mil X)	002-8099	£2,783.35
SV100C SCANNER/VERIFIER (low density codes, corrugated applications)	002-8102	£2,783.35
SV200-1 SCANNER /VERIFIER (higher speed, medium density applications)	002-8119	£2,783.35
SV200-2 SCANNER/VERIFIER (higher speed, high density applications)	002-8254	£2,783.35
<b><u>SV OPTIONS <sup>4</sup></u></b>		
RASTERING SCAN LINE – ADD £345 TO LIST PRICE		
<b><u>SV SERIES ACCESSORIES</u></b>		
SATO <sup>2</sup> 8400/8450/CL608/CL408 INTERFACE CABLE (incl. universal PSU)	002-8106	£ 107.51
Note: If used w/re-winder, Sato Power Supply part # 11S000120 required Power Supply must be purchased through Sato Distribution		
ZEBRA <sup>2</sup> 105S/105SE/160S INTERFACE CABLE (incl. universal PSU)	002-8105	£ 219.00
ZEBRA <sup>2</sup> Xiii/Xiiii INTERFACE KIT <sup>7</sup>	002-8098	£ 394.21
Includes: Interface PCB, universal PSU, verifier cable		
ALTERNATE ZEBRA <sup>2</sup> Xiii INTERFACE KIT <sup>7</sup>	002-8248	£ 537.56
Includes: Interface PCB, universal PSU, printer EPROMs, verifier cable		
ALTERNATE ZEBRA <sup>2</sup> Xiii INTERFACE CABLE (incl. universal PSU) <sup>5,7</sup>	002-8153	£ 107.51
ZEBRA <sup>2</sup> Xi INTERFACE CABLE (incl. universal PSU)	002-8104	£ 107.51
DATAMAX I/W CLASS INTERFACE CABLE (SV SERIES and OLI5000) <sup>8</sup>	173875-001	£ 119.46
INSTALLATION KIT (ScanVision, universal PSU, power and comm cables)	002-8107	£ 79.64
POWER SUPPLY (universal PSU and cable)	002-7766	£ 47.78
COMMUNICATION CABLE (null modem)	002-7639	£ 39.82
POWER SUPPLY/SENSOR/OUTPUT CABLE (incl. universal PSU ) <sup>6</sup>	002-8344	£ 155.29
STANDARD MOUNTING STAND ASSEMBLY <sup>1</sup>	002-4608	£ 207.06
“SKY HOOK” MOUNTING STAND ASSEMBLY <sup>1</sup>	002-7972	£ 238.91
ADDITIONAL SV MANUAL (manuals are included with SV units)	002-7942	£ 75.66
ScanVision (PC software for setup and monitoring)	002-7974	£ -
ScanVision MANUAL (manuals are included with ScanVision)	002-8151	£ -
SV100 SCANNER/VERIFIER DEPOT SERVICE (IRVINE, CA)		£ 862.75
SV100HD, SV100C, SV200-1 DEPOT SERVICE (IRVINE, CA)		£ 995.48

1 £138 if purchased with an SV Scanner/Verifier

2 Zebra is a registered trademark of Zebra Technologies Corp.

Sato is a registered trademark of Sato Corp.

3 Flat rate (**Not Discountable**) including material and labor,  
**Customer pays freight both ways.**

4 Contact RJS to define specifications and part numbers

5 Requires Zebra applicator board and specific printer EPROMs  
**(contact RJS for info)**

6 Designed to interface with a Banner Mini-Beam sensor  
**(sensor not included with cable)**

Mini-Beam is a trademark of Banner Engineering Corporation

7 Contact RJS Technical Support for Application Details and System Limits

8 Requires GPIO port installed in printer

ALL PRICES EXCLUDE DELIVERY & VAT

**For further details please contact Newbury Data on 01606 593424**